UNION CARBIDE

NUCLEAR DIVISION NEWS

A Newspaper for Employees of the Nuclear Division, Union Carbide Corporation

Vol. 4 — No. 11 June 7, 1973

QUESTION BOX ??

If you have questions on company policies, benefits, etc. or any other problems with which we might help, just let us know. Drop your inquiry to the Editor, **Nuclear Division News.** *(Or telephone it in to your plant news representative . . . see page two). You may or may not sign your name. It will not be used in the paper if you so desire.*

Questions are referred to the proper authorities for accurate answers. Each query is given serious consideration for publication.

Answers may be given to employees personally if they so desire.

QUESTION: Why is it not possible for weekly-payroll employees to bid on available jobs within the bargaining unit? Many of these openings are better than my own job. Could not these jobs be filled within the organization before going to the outside to fill them?

ANSWER: Where contracts between the Company and Unions representing hourly employees in various bargaining units require the posting of vacancies within the appropriate unit, such vacancies are posted for bidding in accordance with the applicable contract, and employees in the unit involved are given first consideration. If a job is not filled by someone within the appropriate unit, weekly salaried employees who have indicated an interest have in many instances been selected for these vacancies.

It is the Company policy to provide employees already inside the organization an opportunity to move into vacancies before going outside whenever this is possible.

If a weekly employee is qualified and is interested in a job in the bargaining unit, his or her supervisor and/or the Employment Department should be advised of this interest.

QUESTION: How much time is an employee granted due to a death in his immediate family, and why is it that some departments grant an employee three days personal leave for this purpose while others allow one and no more than two?

ANSWER: There is no standard amount of personal leave allowed in the case of death in an employee's immediate family. The circumstances surrounding each individual case are considered in arriving at the necessary time off the job. We are not aware of any blanket or arbitrary 1- to 2-day restriction and would not support it.

The maximum amount of time off the job with pay for hourly employees is governed by a specific agreement reached in negotiations and is included in each installation's collective bargaining agreement.

QUESTION: As a weekly employee, will I be given more consideration for a merit increase if I start work early and work late?

ANSWER: No. Weekly salaried employees are expected to start work at their scheduled starting time and to quit at their scheduled quitting time. If authorized by their supervisor to start work early or to work late, it is Company policy that they be paid for such time, usually on an overtime basis. Starting to work early or working late, without authorization, is contrary to Company policy and would not enhance consideration for a merit increase.

QUESTION: I have not been working in Oak Ridge very long, but I have heard that at one time there was bus service to and from the Carbide plants. Why was this service discontinued? Is there a possibility that the service could be reestablished?

It appears to be a good idea, especially with the present concern about air pollution caused by automobiles. Bus service would also make it more convenient for nonautomobile owners to get to and from work.

ANSWER: Bus service to the Oak Ridge plants was started during World War II. However, as new cars became available after the war, use of plant buses gradually decreased. In 1960, the operator, American Industrial Transit (AIT), discontinued its service. The primary reason given was the lack of passengers.

Incidentally, community bus service, financed by the Atomic Energy Commission, also was discontinued in 1960. This system was unable to make ends meet because of a steadily declining volume of customers. During the 1960s, the city and several private groups tried a variety of busing arrangements, but found this economically impractical.

Next Issue

The next issue will be dated June 21. The deadline is June 13.

Savings plan improvements set to include new options

Several improved features will be included in the Union Carbide Savings Plan, effective July 1. The principal improvements involve the removal of the $83 per month maximum, and additional investment opportunities in the Personal Investment Account.

The Plan will continue to have two parts -- a short-term savings fund known as the General Savings Fund, and a long-term savings fund. The name of the latter is being changed from the Personal Savings Account to the Personal Investment Account.

New minimum

One of the changes involves the maximum and a new "minimum" figure. Also starting in July, all employee contributions must be on a percentage basis. Previously, employees could put a specified dollar amount or seven and one-half percent of normal straight-time earnings, including any shift premium, up to $83 a month into the Plan. The $83 maximum is being removed. An eligible employee will be able to put a full seven and one-half percent of his normal straight-time earnings into the Savings Plan, no matter how much that comes to in dollars. A new minimum of two and one-half percent is being established. An employee may put as little as two and one-half percent of his normal straight-time earnings into the Savings Plan, or his deduction may be any percentage he chooses, so long as it is in one-half percent steps. With the percentage feature, the actual dollar amount would change, naturally, as income changes in the future.

For each dollar put in the Savings Plan, the Company contributes 10, 20, or 30 cents, depending on an employees years of Company Service Credit. If he has between one and two years, Union Carbide adds 10 cents to each dollar he saves; with two to three years, 20 cents; and with three or more years, 30 cents.

Pay-Off every two years

Options under the old Plan allowed employees to participate 100 percent in either part - the General Savings Fund, or the Personal Investment Account; or 50 percent in both. Under the new improvement, an employee may divide his money in 25 percent steps . . . that is, 25 percent in the GSF, 75 percent in PIA, or vice versa, or in any other divisions in the 25 percent scale.

The General Savings Fund will include all previous rules. It pays out in cash

(Continued on page 10)

CONGRATULATIONS — Roy L. Williams, left, development specialist at the Oak Ridge Y-12 Plant, is congratulated by Nuclear Division President Roger F. Hibbs. Williams was the recipient of the gold medal from the Society of Manufacturing Engineers, for his contributions last year to the Society and to the engineering profession.

Savings bond drive shows 61% now on payroll savings

With near-final figures in, the entire Nuclear Division is participating in the U.S. Savings Bond program -- through payroll deductions -- by some 61 percent of its employment!

The Y-12 Plant is the newest addition to the Treasury Flag holders -- as they pass the 50 percent mark for the first time.

A breakdown by plants show the following percentages, participating in the payroll deduction plan, plant by plant:

General Staff:	91 Percent
ORGDP:	85 Percent
Paducah:	80 Percent
Y-12 Plant:	58 Percent
ORNL:	42 Percent

These figures reflect totals through May 25, and will change slightly when final figures are compiled.

Thus, all segments of the Nuclear Division will fly Treasury Flags with the exception of ORNL.

Y-12 reported a host of new departments participating 100 percent. In Engineering there were Design Engineering Division, Y-12 Plant Engineering Division, Civil and architectural engineering department, instrument and electrical engineering, electrical engineer, instrumentation and control engineering, instrument engineering, estimating engineering and procurement coordination.

In Materials and Services there are materials and services administration and engineering services.

Production, Engineering and Scheduling features procurement planning and the senior staff.

Shift Superintendents Division included shift superintendents, security, and fire protection group.

In the Superintendents Division there were technical information services, wage and salary administration and the superintendents division.

The Assembly Division has Beta Four assembly and Beta Two assembly, as well as Compo operations assembly.

Y-12's GENERAL SHOP JOB LIASON – 100 PERCENT!

PURCHASING DIVISION 100 PERCENT! – The entire Purchasing Division subscribes to the payroll deduction plan for buying U.S. Savings Bonds. One section, seen above, endorsed the idea completely. The remaining part of the division waited on one employee, who was vacationing. As soon as she came back, they went over the hump . . . 100 percent!

ORNL's Coutant to serve on EPRI advisory council

Charles C. Coutant, supervisor of the Thermal Effects Project in the Environmental Sciences Division at ORNL, has been asked by the Electric Power Research Institute to serve as a member of its Advisory Council.

Coutant is one of 25 representatives of the scientific and academic community, environmental groups, labor and government being asked to serve on the Council. Seven members were designated by the National Association of Regulatory Utility Commissioners to represent utility regulators. The Council's objective is "to turn out a steady stream of significant technological options that can be used in the public interest by the utility industry to serve the Nation's energy needs."

Coutant received the Ph.D. degree in biology/ecology from Lehigh University. Before joining the ORNL staff in 1970, he conducted both laboratory and field studies on the effects of thermal discharges to the Columbia River ecosystem while employed by Battelle Memorial Institute, Pacific Northwest Laboratories, Richland, Wash.

The author of several publications in the field of aquatic ecology, Coutant has also participated in the preparation of environmental impact assessments for the AEC. He holds membership in the American Association for the Advancement of Science, American Fisheries Society, American Society of Limnology and Oceanography, Ecological Society of America, American Institute of Biological Sciences, Society of Sigma Xi and the Water Pollution Control Federation's Research Committee.

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PATENTS Granted

To Paul A. Haas, ORNL, for "Conversion of Fuel-Metal Nitrate Solutions to Oxides."

To Floyd M. Glass, ORNL, for "Small-Current Integrator."

To Raphael A. Dandl, ORNL, for "Bumpy Torus Plasma Confinement Device."

Nuclear Division deaths

Polie E. Arnold, Y-12's Product Engineering and Scheduling, died May 21, in a Knoxville hospital.

A native of Benton, Arnold came to work with Union Carbide in 1944 at ORGDP, and later transferred to Y-12. He was active in Scouting, and was awarded the Order of the Arrow.

Mr. Arnold

Survivors include his wife, Mrs. Mildred P. Arnold; son, Edward S. Arnold; daughter, Jacqueline A. Henry; two sisters and one brother. The Arnold home is at 108 Timothy Avenue, Clinton.

Funeral services were held at the Memorial United Methodist Church, Clinton, with the Rev. Wayne Cummings officiating. Burial followed in Camden.

Mr. Arnold was active in civic functions in Clinton.

RETIRED ORGDP MAN

Ambrose D. Collier, who retired from ORGDP in 1965, died in the Oak Ridge Hospital May 20. He is survived by his wife, two daughters and six sons. Sixteen grandchildren and one great-grandchild also survive. Services were held at Bethel Methodist Church, Kingston, with burial in the church cemetery.

Woodrow Wills, a maintenance mechanic at Oak Ridge Gaseous Diffusion Plant, died May 29 at a Knoxville hospital.

Mr. Wills, who came to ORGDP in 1944, lived at 3101 Gerson Drive, Knoxville.

Mr. Wills

He is survived by his wife, Mrs. Bertha Hensley Wills; three sons, Buddy Ray, Claude and Larry Wills; two daughters, Mrs. Wilma Moore and Mrs. Louise Mason; a brother and four sisters.

Funeral services were held at Berry's Funeral Chapel, with the Rev. Richard Allison and the Rev. C.H. Christopher officiating. Burial followed in Woodlawn Cemetery.

RETIRED FIRE, GUARD HEAD

Miles H. Bradford, retired chief of the Fire and Guard Departments in Y-12, died May 26 in a Knoxville hospital. The Y-12er lived in Norris where he was past president of the Norris chapter of the American Association of Retired Persons. Survivors include his wife and a sister. Funeral services were held at St. Francis Episcopal Church, Norris, with burial in Anderson Memorial Gardens.

Leitnaker

Leitnaker elected fellow, American Ceramic Society

James M. Leitnaker, staff member in the Metals and Ceramics Division at ORNL, has been elected a Fellow of the American Ceramic Society.

Leitnaker joined the ORNL staff in 1965, and has a Ph.D. degree in physical chemistry from the University of Kansas. He worked at Los Alamos Scientific Laboratory, and was head of the department of chemistry at Baker University, prior to coming to Oak Ridge. His work at ORNL has been concerned with the development of oxide fuel for light water breeder reactors. He has been a member of the traveling lecture program and has served as dean of summer students for his Division.

Leitnaker is a member of the Nuclear Division of ACS, and has served as local arrangements chairman and as a member of the Program Committee.

The American Ceramic Society elects no more than 20 members to fellowship each year. The only other ORNL employee who is an ACS Fellow is Roy Thoma.

Carbon, molded graphite report now available

The Y-12 Plant's development studies of precursor carbon and molded graphite, conducted over a six-year period, have been summarized into a single document that will be made publicly available through the National Technical Information Service.

The studies, made for the U.S. Atomic Energy Commission, contain information generated in conjunction with the development of a nuclear rocket engine for space flight missions.

The Y-12 report describes the investigation of a number of hydrocarbon derivatives of indene as possible binders or precursors for fillers in graphite fabrication. Isotruxene, truxene, acenapthalene, cinnamylideneindene and some mixtures of these materials were studied in considerable detail. The purpose of the studies was to develop reproducible graphites capable of withstanding high structural stress at high temperatures.

The report, entitled "NERVA Fuel Element Development Program Summary Report -- July, 1966 through June, 1972," was compiled by Lyle G. Overholser at the Y-12 Plant.

Element 104 identified by researchers at ORNL, extending periodic table

Scientists at Oak Ridge National Laboratory have conclusively identified element 104. Identification of element 104, which is one of the heaviest man-made elements in the chemical periodic table, represents a major advance in man's attempt to expand the limits of the chemical elements.

Although the discovery of element 104 was reported previously by Soviet scientists and by scientists at the University of California at Berkeley, each group has continued to dispute the other's results. The ORNL scientists have used a technique based on the observation of characteristic X-rays which provides a direct connection to atomic number. This technique identifies the element conclusively. The Berkeley experiments, conducted a few years ago, led to the same isotope of element 104 as the recent ORNL work, 104-257.

The team of ORNL researchers includes Curtis E. Bemis Jr., Robert J. Silva, O. Lewin Keller Jr., James R. Tarrant, Lee D. Hunt, all of the Chemistry Division, and David C. Hensley of the Physics Division.

The scientists are already planning experiments with element 105, the discovery of which is also the subject of dispute. In addition, the team will seek to produce and identify other isotopes of element 104, and eventually hopes to extend the periodic table by producing elements beyond element 105.

The team of ORNL researchers has used an ingenious adaptation of an old technique first developed in the early 1900's by the English physicist, H.G.J. Moseley. Moseley first realized the direct connection between the characteristic X rays and atomic number and this technique was first used to unravel the mysteries of the periodic table as they existed in the early 1900's. Since no two elements have the same characteristic X-ray spectrum, the ORNL team applied this technique to unraveling the modern-day mysteries of the chemical periodic table in the transuranium element region. The transuranium elements above atomic number 100 are particularly elusive because only a few atoms are available for study at a given time, and the rapid spontaneous disintegration of these elements prevents their study for periods longer than a few seconds.

Methods used

To produce the numbers of atoms of element 104 necessary for the identification experiments, the ORNL scientists bombarded a target of californium-249, another man-made element, with an intense beam of carbon nuclei accelerated to an energy of 75 million electron volts by the Oak Ridge heavy-ion cyclotron, ORIC. The ORIC, an extremely versatile accelerator, is perhaps the most useful heavy-ion cyclotron currently operating in the United States.

The combination of 75 million electron volt carbon-12 nuclei with the californium-249 target nuclei, followed by the instant emission of 4 neutrons, produces an isotope of element 104 with mass number 257. The atoms of element 104 recoiled out of the californium target material and were slowed down and stopped in a small chamber filled with helium gas. The recoil atoms were continually pumped through a small orifice in the chamber where they then were collected on a small disc of aluminum, called a "rabbit."

WHERE WILL IT GO? — The ORNL researchers who conclusively identified element 104 discuss where it will fit in the periodic table. They are from left, Lee D. Hunt, James R. Tarrant, O. Lewin Keller, David C. Hensley and Robert J. Silva. Curtis E. Bemis is in the foreground.

Alpha particles

Following a bombardment and collection time of about ten seconds, the "rabbits" were rapidly transferred to a nearby counting laboratory outside the heavily-shielded bombardment room. Because the half life for this isotope of element 104 is only 4.3 seconds (time for half of the atoms to decay), speedy transfer was required and hence the name "rabbit." The rabbit discs were automatically positioned in an elaborate counting apparatus. There, automatic detection equipment observed alpha particles coming from element 104.

The equipment also contained an X-ray detector which was adjusted to count those X rays which had the energy of a characteristic X ray of element 102 and which occurred simultaneously with an alpha particle of the proper energy for the supposed element 104. The X-ray energy identified the atom from which it came as 102, and the simultaneity with the alpha particle showed that the parent atom must have been two higher in atomic number than the daughter (element 102) since loss of an alpha particle (nuclear charge two) lowers the atomic number by two.

Other element

Thirty thousand 10-second bombardment and counting cycles were performed which produced about 3000 atoms of element 104. This small number of atoms is actually the largest amount of element 104 that has ever been produced.

It is significant that the californium target material (atomic number 98) was also produced at Oak Ridge National Laboratory. Only 10 millionths of an ounce (220 micrograms) of this rare and valuable element was used in the target. This isotope of californium, californium-249 with a half life of 350 years, was produced by a prolonged intense neutron irradiation of plutonium, another man-made element, in the High Flux Isotope Reactor (HFIR). This research reactor and adjoining separation and recovery facility (TRU) are major facilities of the U.S. Atomic Energy Commission's transuranium element production program for research purposes.

Paducah in midst of Spring cleanup

The Paducah Plant's Spring Clean-Up Committee with Robert C. Riepe as chairman has chosen the theme, "Have a Clean-up Spree in '73," as its topic. The committee selected this week as its week of concentrated effort. Eight inspection teams will conduct inspections of the plant on June 7 and 8 to insure that clean-up is being accomplished and to point out areas where improvement is needed. During the week of June 7, a "Clean-up Inspection Guide" will be distributed to all employees. Its purpose is to point out areas on the job and at home where fire hazards are common and to provide a check list to be used to help eliminate these hazards.

Since fire is a major result of a poor clean-up effort the National Fire Protection Association is making an all out effort this year to promote Spring Clean-up. The NFPA advises, at work, get rid of empty cartons, dirty cloths and accumulated scrap. Clean up oil spills and dust piles. Make sure flammable liquids are kept in unbreakable, leak-proof containers with tight-fitting caps and are stored well away from heat and open flames.

At home, the attic, basement, closets or garage are the places were rubbish is most likely to pile up. Clear these and other storage areas of old papers and rags, toys, clothing, furnishings.

If you think things are too good to throw away, cautions NFPA, remember that by keeping them you may be adding to the fire hazards where you work and live.

SILVER BEAVER AWARD — Jack B. Judd, ORGDP Development Maintenance, right, is the recipient of the Silver Beaver Award from the Boy Scouts. He has previously been given the Scouters Key, Woodbadge Award, Scouters Training Award and has been received as a member of the Order of the Arrow in which he takes an active part. Above, Mrs. Hudd received the award in his behalf from Ditt T. Welch, Catoosa District Scout Commissioner.

Cole gets UT's outstanding engineering alumnus award

Nancy C. Cole, Metals and Ceramics Division at Oak Ridge National Laboratory, recently received the Outstanding Engineering Alumnus Award from the College of Engineering at The University of Tennessee.

Mrs. Cole, the first female co-op and metallurgical engineer to graduate from the University, came to work at ORNL in 1963. Her work currently involves studying welds in stainless steels and developing improved filler metals for shielded metal-arc, gas tungsten-arc and submerged-arc welding of austenitic stainless steels for reactor applications. She was involved in building one of the largest and most complicated molybdenum systems ever designed, and developed the brazing filler metal which was used in the fabrication of that system.

The recipient of three patents, Mrs. Cole has authored and coauthored many publications in the field of metallurgical engineering. She is a member of the American Society for Metals, and serves on the Executive Council of the local section of the American Welding Society.

Mrs. Nancy C. Cole

Mrs. Cole and her husband, Leon, have two children and live at 12001 Firestone in Concord, Tenn.

X-10 Graphite reactor will be ASM historical landmark

The X-10 Graphite Reactor at Oak Ridge National Laboratory will be designated an American Society for Metals National Historical Landmark at 11 a.m. Friday, June 8, in the Graphite Reactor building.

The Graphite Reactor was nominated for the honor by the Oak Ridge Chapter of ASM. The significant research done on the effects of radiation on materials and production of radioisotopes (used as tracers in diffusion experiments and in many other metallurgical experiments) was cited as the reactor's contribution toward the development of the nation in the field of metals and metalworking.

Manly Putnam

Constructed as part of the Manhattan Project, the Graphite Reactor was designated a Registered National Historic Landmark by the National Park Service in 1966. It is the world's oldest nuclear reactor, and is the only U.S. Atomic Energy Commission-owned reactor to be opened to the public.

Attending the dedication ceremonies will be Clarence E. Larson, commissioner, AEC; William D. Manly, president of ASM; Allan R. Putnam, managing director of ASM; Paul R. Vanstrum, vice president for production, Nuclear Division; Robert J. Hart, manager of AEC Oak Ridge Operations; Alvin M. Weinberg, director of ORNL; Floyd L. Culler, acting director of ORNL; and Richard L. Philippone, chairman of the Oak Ridge Chapter of ASM, and AEC site representative.

The American Society for Metals is a nonprofit educational society working for improved technology in materials and process engineering. It has about 40,000 members in 130 chapters throughout the United States, Canada, Mexico and in 50 other nations. The Oak Ridge Chapter has a membership exceeding 230.

Klima and Russell get eagle awards

Andy Russell and Steve Klima

The Eagle award, the highest rank in the scouting program, was recently awarded to two scouts in Troop 326. The boys, both sons of ORNL employees, are Andy Russell and Steve Klima.

Andy, the son of Mr. and Mrs. John A. Russell Jr. (Instrumentation and Controls Division), is a senior at Oak Ridge High School. He has attended aquatic school and is the scout lifeguard. Andy also holds membership in several school and church organizations and is an avid sailboat racer. He plans to study engineering at The University of Tennessee next fall.

Steve is the son of Mr. and Mrs. B. Bartley Klima (Chemical Technology Division). He is also a senior at Oak Ridge High School. Steve is a member of the school chorus, the Key Club and serves as president of Post 326. He will attend Carson Newman College after graduation.

July 1, 1973 is settlement time in the General Savings Fund of Carbide's Savings Plan. Is your address correct?

Gatlinburg conference centers around carbon

Carbon, one of the most abundant and important of the earth's chemical elements, was the subject of an international conference in Gatlinburg, June 4-8.

Four hundred scientists and engineers from a dozen nations attended the Eleventh Biennial Conference on Carbon, which was held at the Riverside Lodge.

The conference was sponsored by the American Carbon Committee and the Oak Ridge National Laboratory. Walter P. Fatherly, ORNL, is conference chairman, and Howard E. Martens, Jet Propulsion Laboratory, is chairman of the American Carbon Committee.

About 200 technical papers were presented in concurrent sessions. Subjects ranged from the use of graphite in nuclear reactors to biomedical applications of carbon. Widespread interest in carbine is due to the almost infinite useful forms and applications of the elements. It is used in such commonplace items as flashlight batteries, yet has such exotic applications as heat shields and nose cones for space vehicles.

Several social activities were planned, including an evening cookout in the Great Smoky Mountains.

The last word in preposition-ending sentences was coined by the sick child who complained to his mother: "Why did you bring that book that I didn't want to be read to out of for?"

HONORARY MEMBER — George H. Johnstone, foreman in the Electrical, Air-Conditioning and Heating Services department of ORNL's Plant and Equipment Division, is presented honorary membership in the Wise Owl Club by Harry E. Seagren, Division Director. Johnstone's eye was not injured when a flying nail struck one lens of his safety glasses while he was working at home.

Technical Presentations by ORNL Staff Members

Oral presentations by ORNL staff members during March are listed below:

THE AMERICAN PHYSICAL SOCIETY MEETING, March 19-22, San Diego, Calif.:

Metals and Ceramics Division: "Self Consistent Cluster Theories of Disordered Alloys," by W.H. Butler; "KKR Band Structure Calculations for Complex Crystals," by J.S. Faulkner; "Electronic States of Multilayer Graphite," by G.S. Painter; and "Positron-Annihilation-Lifetime Measurements of Alpha-Particle Irradiated Aluminum," by C.L. Snead Jr., A.N. Goland, T.M. Hall, Battelle Northwest Laboratory, and F.W. Wiffen.

Solid State Division: "EPR Observation of ^{243}Cm and ^{247}Cm in $SrCl_2$ Single Crystals," by M.M. Abraham, C.B. Finch, W.P. Unruh, L.A. Boatner and R.W. Reynolds; "The Transition from Static to Dynamic Jahn-Teller Effects in the EPR Spectra of Ag^{2+} in SrO, CaO and MgO," by L.A. Boatner, R.W. Reynolds, M.M. Abraham and Y. Chen; "V^- Center in MgO," by Y. Chen, W.P. Unruh and M.M. Abraham; "Plasmon Energy Gain by Auger Electrons and Double Ionization Events in Be Secondary Electron Spectra," by Leslie H. Jenkins and David M. Zehner; "Thermal and Fission Neutron Damage in Vanadium," by C.E. Klabunde, A.L. Southern, J.K. Redman and R.R. Coltman; "EPR of the $5f^5$ Ions: Pu^{3+} and Am^{4+}," by W. Kolbe, N. Edelstein, C.B. Finch and M.M. Abraham; "High Resolution Diffuse Scattering Measurements on Crystals Containing Clustered Defects," by B.C. Lawson, W.G. Schmatz and F.W. Young Jr.; "Magneto-Optical Properties of the F Center in $KMgF_3$," by F.A. Modine and E. Sonder; "Dislocation Loops in Anisotropic Cubic Crystals," by S.M. Ohr; "EPR Investigations of a 'Quasi-Dynamic' Jahn-Teller Effect for Cu^{2+} in MgO and CaO," by R.W. Reynolds, L.A. Boatner, M.M. Abraham and Y. Chen; "V_{Al} Center in MgO," by W.P. Unruh, Y. Chen and M.M. Abraham; "Effect of Irradiation Conditions on the Size and Concentration of Defect Clusters in Copper," by F.W. Young Jr., and Bennett C. Larson; "Auger and Ionization Loss Spectra from Be Surfaces," by David M. Zehner and Leslie H. Jenkins.

Mathematics Division: "Structure and Properties of Liquid Sodium from Monte Carlo Calculations," by R.H. Fowler.

THE FOURTH ANNUAL LUNAR SCIENCE CONFERENCE, Houston, Texas, March 6-8:

Solid State Division: "Ferromagnetic Resonance Properties of Lunar Fines: Apollo 16," by R.A. Weeks.

Chemistry Division: "Radionuclide Concentrations in Apollo 16 Samples," by J.S. Eldridge, G.D. O'Kelley and K.J. Northcutt; "Solar Flare Induced Radionuclides and Primordial Radioelement Concentrations in Apollo 17 Rocks and Fines -- Preliminary Results," by G.D. O'Kelley, J.S. Eldridge and K.J. Northcutt.

SYMPOSIUM OF THE CHARACTERIZATION OF CORROSION PRODUCTS, National Association of Corrision Engineers Annual Meeting, Anaheim, Calif., March 19-23:

Metals and Ceramics Division: "Chemical and Kinetic Factors in Localized Corrision," by H.S. Isaac; and "Corrosion Product Deposition in Molten Fluoride Salt Systems," by J.W. Koger.

AMERICAN NUCLEAR SOCIETY TOPICAL MEETING ON LIGHT WATER REACTOR SAFETY, Salt Lake City, Utah, March 23-28.

Metals and Ceramics Division: "Ductile-Brittle Behavior of Zircaloy Fuel Cladding," by D.O. Hobson.

Reactor Division: "Estimate of Effect of Localized Flow Blockages on PWR Clad Temperatures During Reflood," by W.R. Gambill; "PWR Blowdown Heat Transfer Separate-Effects Program," by C.G. Lawson, R.H. Chapman and H.W. Hoffman; and "Factors Influencing a Quantitative Safety Assessment of Water Reactor Pressure Vessels," by F.J. Witt.

SHERWOOD THEORY MEETING, University of Texas, Austin, March 12-13:

Thermonuclear Division: "Theory of Neutral Beam Injection into a Tokamak," by J.D. Callen, J.F. Clarke and J.A. Rome; "Tokamak Transport Theory at Oak Ridge National Laboratory," by J.T. Hogan and R.A. Dory; and "MHD Stability of Toroidal Equilibria," by D.B. Nelson and G.O. Spies.

INTERNATIONAL SYMPOSIUM ON STATISTICAL DESIGN AND LINEAR MODELS, Fort Collins, Colo., March 19-23:

Mathematics Division: "Applications of an Algorithm for the Construction of 'D-Optimal' Experimental Designs in n Runs," by T.J. Mitchell.

NORTH AMERICAN POWER SYSTEMS INTERCONNECTION COMMITTEE MEETING, Jackson, Miss., March 15-16:

Health Physics Division: "The Electromagnetic Pulse and the Electric Power System," by J.K. Baird.

DEPARTMENT OF DEFENSE NUCLEAR INFORMATION SYMPOSIUM, Santa Barbara, Calif., March 12-15:

Health Physics Division: "Expedient Shelter Test," by C.H. Kearny and C.V. Chester.

DEFENSE ELECTRIC POWER ADMINISTRATOR'S SEMINAR, Atlanta, Ga., March 1:

Health Physics Division: "Effects of EMP on Power Systems," by D.B. Nelson.

MEETING OF TENNESSEE PUBLIC HEALTH ASSOCIATION, Statistical Section, Gatlinburg, Tenn., March 28:

Health Physics Division: "Demographic Research in Oak Ridge," by R.C. Taeuber.

PUSH BOND DRIVE — Plant taxis at the Oak Ridge Gaseous Diffusion Plant are pushing the current U.S. Savings Bond drive in the area. Bettye Kesterson, left, and Eliza Robinson, drivers, both endorse the idea of savings through payroll deductions.

THIRD REGIONAL SEMINAR ON STATE EMERGENCY PLANNING IN RELATION TO LICENSED NUCLEAR FACILITIES, Upton, N.Y., March 19-23:

Health Division: "Medical Support in the Radiological Accident Situation," by Dr. T.A. Lincoln.

SEMINAR AT PURDUE UNIVERSITY, Lafayette, Ind., March 15:

Metals and Ceramics Division: "Technological Problems in the Development of Fusion Reactors," by F.W. Wiffen.

AMERICAN SOCIETY OF METALS SEMINAR ON FAILURE ANALYSIS, Oak Ridge, March 31:

Metals and Ceramics Division: "Chronology of a Failure Investigation," by R.G. Berggren; "Failures in Large Steel Structures," by D.A. Canonico; and "Nondestructive Testing Techniques," by R.W. McClung.

APPA ENGINEERING AND OPERATIONS WORKSHOP, Knoxville, March 12-15:

Reactor Division: "State of the Art of Energy Conversion Today and Tomorrow," by C.C. Burwell.

Recent Publications

Recent publications by ORNL staff members are listed below.

BIOLOGY DIVISION

F.W. Hauker and Tuneo Yamada, "Enhancement of RNA Labeling in Iris and Lens by Woodning Cornea," in EXPERIMENTAL CELL RESEARCH, March.

H.V. Malling and F.J. de Serres, "Genetic Alterations at the Molecular Level in X-Ray Induced ad-3B Mutants of Neurospora Crassa," in RADIATION RESEARCH, March.

L.O. Ingram and W.D. Fisher, "Novel Mutant Impaired in Cell Division: Evidence for a Positive Regulating Factor," in JOURNAL OF BACTERIOLOGY, March.

L.O. Ingram and W.D. Fisher, "Mechanism for the Regulation of Cell Division in Agmenellum," in JOURNAL OF BACTERIOLOGY, March.

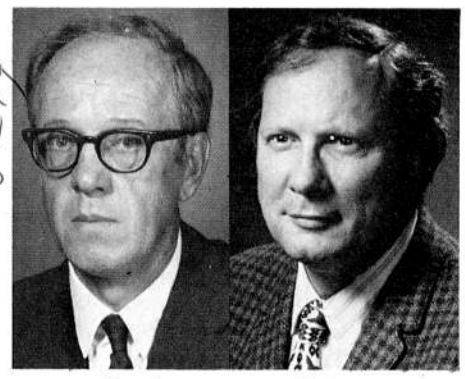
R.B. Setlow and J.D. Regan, "The Average Size of the Repaired Regions in Human DNA Damaged by Gamma-Rays," in ABSTRACTS, 17th Annual Meeting of the Biophysical Society, March.

F.A. Salinas and M.G. Hanna Jr., "Immunological Crossreactivity of Tumor Associated Fetal Antigens," in PROCEEDINGS, American Association for Cancer Research, March.

B.L. Batzing, J.N. Ihle, M. Yurconic Jr., R.W. Tennant and M.G. Hanna Jr., "Autogeneous Immunity to Endogenous RNA Tumor Virus: Chronic Humoral Immune Response to Viral Envelope Antigens in B6C3F1 Mice," in PROCEEDINGS, American Association for Cancer Research, March.

(Continued on page 6)

Bolton and Boyd elected to offices



Boyd Bolton

Two ORNL staff members were elected to offices in professional organizations recently. They are Newell E. Bolton, Health Division, and George E. Boyd, Solid State Division.

Newell Bolton will be installed as vice president of the American Academy of Industrial Hygiene at the organization's annual meeting in May. Bolton, head of the Industrial Hygiene Department, joined the Carbide staff in 1952. He worked at ORGDP and Carbide's Technical Center in South Charleston, W. Va., before coming to ORNL in 1961.

Bolton, who received a B.S. degree in chemistry from the University of Georgia, is certified in comprehensive practice by the American Board of Industrial Hygiene. He is vice chairman of technical committees of the American Industrial Hygiene Association, and is past president of the Tennessee Valley Section, AIHA. Bolton has authored several publications on industrial hygiene.

George Boyd was elected to the Executive Committee of the Division of Physical Chemistry of the American Chemical Society at its National meeting in Dallas, Tex., last month. A former assistant laboratory director and senior scientific advisor, Boyd received a Ph.D. degree in physical chemistry at the University of Chicago. He was Associate Professor of Chemistry at the University until 1948. He was a member of the Manhattan Project at Chicago and joined the ORNL staff in 1943.

Boyd has been the recipient of many awards and is the author of numerous scientific publications. He is listed in **Who's Who in America, American Men of Science,** and **Who's Who in Atoms.** Currently, he is co-chairman of the 1973 NATO Advanced Study Institute on "Charged Gels and Membranes" to be held in France in September.

Patents granted

To William R. Martin and George A. Reimann, ORNL, for "Process for Producing a Fine-Grained 316 Stainless Steel Tubing Containing a Uniformly Distributed Intragranular Carbide Phase."

ON MATHEMATICS

"Mathematics prossesses not only truth, but supreme beauty -- a beauty cold and austere, like that of sculpture, without appeal to any part of our weaker nature, sublimely pure, and capable of a stern perfection such as only the greatest art can show."

Bertrand Russell

Recent Publications

(Continued from page 5)

R.W. Tennant, J.G. Farrelly and F.T. Kenney, "Effects of Polyadenylic Acids on Transformation and Activation of Mouse RNA Tumor Viruses," PROCEEDINGS, American Association for Cancer Research, March.

R.L. Schenley and P.A. Swenson, "Respiration Responses of Repair-Deficient Mutants of E. COLI After UV Irradiation: Dependence on Extent of Degradation of DNA," in ABSTRACTS of 17th Annual Meeting of Biophysical Society, March.

R.H. Miller, Peter Mazur and S.P. Leibo, "Response of Human Red Cells to Freezing and Thawing as a Function of the Permeation of Protective Solutes," in ABSTRACTS of 17th Annual Meeting of the Biophysical Society, March.

C.A. Ghiron and J.W. Longworth, "Evidence for Triplet-Triplet Energy Transfer in Alpha-Trypsin," in ABSTRACT of 17th Annual Meeting of the Biophysical Society, March.

M.L. Randolph "DNA Molecular Weight Distributions and Averages from Ultracentrifugation in Sucrose Gradients," in ABSTRACTS of 17th Annual Meeting of the Biophysical Society, March.

J.W. Longworth and S.S. Stevens, "Measurement of the Lifetime of Protein Fluorescence by Delayed Coincidence Time Spectroscopy," in ABSTRACTS of 17th Annual Meeting of the Biophysical Society, March.

D.E. Clins, A.L. Olins and E.B. Wright, "Chromatin Structure in Isolated Eucaryotic Nuclei," in ABSTRACTS of 17th Annual Meeting of Biophysical Society, March.

J.E. Donnellan Jr., R.S. Stafford and M.C. Paterson, "Gamma Ray Lesions in Bacterial Spores," in ABSTRACTS of 17th Annual Meeting of Biophysical Society, March.

W.L. Carrier and R.B. Setlow, "The Separation of a UV-Endonuclease from a Gamma-Eudonuclease of M. LUTEUS," in ABSTRACTS of 17th Annual Meeting of Biophysical Society, March.

Rhonda F. Grell, "Recombination and DNA Replication in the Drosophila Melanogaster Oocyte," in GENETICS, March.

O.L. Miller, "Visualization of Genes in Action," in SCIENCE AMERICA, March.

R.O. Rahn, "Detection of Alkali-Labile Bonds in DMSO-Sucrose Gradients," in ABSTRACTS of 17th Annual Meeting of Biophysical Society, March.

R.J. Wilkins, "Detection of Endonuclease Sensitive Sites in the DNA of UV-Irradiated Human Cells," in ABSTRACTS of the 17th Annual Meeting of the Biophysical Society, March.

Jane K. Setlow, N.K. Notani and D.P. Allison, "Recombination in Transfection of Haemophilus influenzae," in ABSTRACTS of 17th Annual Meeting of the Biophysical Society, March.

D.J. Hoffman and S.K. Niyogi, "RNA Initiation with Dinucleoside Monophosphates During Transcription of Bacteriophage T4 DNA with RNA Polymerase of Escherichia coli," in PROCEEDINGS, National Academy of Sciences, U.S.A., March.

R.B. Setlow and W.L. Carrier, "Endonuclease Activity Toward DNA Irradiated in Vitro by Gamma Rays," in NATURE, March.

J.E. LeClerc and Jane K. Setlow, "Ultraviolet Damage effects of Combining Ultraviolet Repair and Recombination Mechanisms in Haemophilus influenzae," in NATURE, March.

Mayo Uziel, "Periodate Oxidation and Amine-Catalyzed Elimination of the Terminal Nucleoside from Adenylate or RNA - Product of Over-Oxidation," in Biochemistry, March.

F.W. Jauker and Tuneo Yamada, "Progressive Alteration in the Pattern of Nucleic Acid Metabolism in the Newt Iris in Cultivation," in J. EXPERIMENTAL ZOOLOGY, March.

J.N. Dumont and Tuneo Yamada, "Dedifferentiation of Iris Epithelia Cells," in DEVELOPMENTAL BIOLOGY, March.

L.O. Ingram and W.D. Fisher, "Stimulation of Cell Division by Membrane-Active Agents," in BIOCHEM. BIOPHYS. RES. COMM., March.

J.G. Brewen, R.J. Preston, Katherine P. Jones and D.G. Gosslee, "Genetic Hazards of Ionizing Radiations: Cytogenetic Extrapolations from Mouse to Man," in MUTATION RESEARCH, March.

D.S. McDevitt, "Sequential Appearance of Alpha, Beta and Gamma-Crystallins in Embryonic and Metamorphic Rana Pipiens," in EXPERIENTIA, March.

CHEMISTRY DIVISION

P.A. Agron, H.A. Levy and B.J. Bogardus, "Thermoelectric Cooling Device for a Single Crystal Neutron Diffractometer," in J. APPLIED CRYSTALLOGRAPHY, March.

J.H. Burns, W.H. Baldwin and J.R. Stokely, "Studies with Heptavalent Neptunium: Identification and Crystal-Structure Analysis of LiCo $(NH_3)_6Np_2O_8$ $(OH)_2$ $2H_2o^1$," in INORGANIC CHEMISTRY, March.

A.S. Dworkin and M.A. Bredig, "Miscibility of Liquid Metals with Salts. XI. The system Yttrium Metal-Yttrium Trichloride at High Temperatures," in CHEMICAL & ENGINEERING DATA, March.

N.C. Singhal, N.R. Johnson, E. Eichler and J.H. Hamilton, "Gamma-Ray Studies on the Decay of 2.41-min ^{108}Ag," in PHYSICAL REVIEW JOURNAL, March.

R.E. Meyer, F.A. Posey and P.M. Lantz, "An Electrochemical Method for Monitoring the Oxygen Content of Aqueous Streams at the Part-Per-Billion Level," in DESALINATION, March.

Ralph Livingston and Henry Zeldes, "Polarization Effects in Free Radicals Studied by Electron Spin Resonance During Photolysis of Liquids," in JOURNAL OF MAGNETIC RESONANCE, March.

J.S. Eldridge, G.D. O'Kelley and K. J. Northcutt, "Abundances of Primordial and Cosmogenic Radionuclides in Apollo 14 Rocks and Fines," in PROCEEDINGS of the Third Lunar Science Conference, March.

G.D. O'Kelley, J.S. Eldridge, E. Schonfeld and K.J. Northcutt, "Primordial Radioelements and Cosmogenic Radionuclides in Lunar Samples from Apollo 15," PROCEEDINGS of the Third Lunar Science Conference, March.

HEALTH PHYSICS DIVISION

J.S. Gailar, "What's New in Soviet Civil Defense?" in SURVIVE, March.

M.N. Pisanias, L.G. Christophorou, J.G. Carter and D.L. McCorkle, "Compound-Negative-Ion Resonance States and Threshold-Electron Excitation Spectra of N-Heterocyclic Molecules: Pyridine, Pyridazine," in J. CHEM. PHYS., March.

METALS AND CERAMICS DIVISION

R.W. Hendricks, "A Pulse-Matching Method for Estimating the Gas Amplification Factor in Proportional Counters," in NUCL. INSTRUM. METHODS, March.

J.W. Koger, "Fluoride Salt Corrosion and Mass Transfer in High Temperature Dynamic Systems," in CORROSION, March.

B.T.M. Loh and C.T. Liu, "Nearest Neighbor Pair Models for Solutions," in SCRIPTA METALS, March.

G.N. Papatheodorou and G.P. Smith, "Electronic Absorption Spectra of Platinum (II) Centers in Liquid Alkali Metal Chlorides," in J. INORG. NUCL. CHEM., March.

NEUTRON PHYSICS DIVISION

R.W. Roussin, R.G. Alsmiller Jr. and J. Barish, "Coupled Calculations of the Transport of Neutrons and Secondary Gamma Rays Through Concrete for Neutron Sources with Energies Between 15 and 75 MeV," in NUCL. ENG. & DESIGN, March.

F.R. Mynatt, Letter to the Editor, "Shielding: Critique of Critique," in NUCLEAR NEWS, March.

SOLID STATE DIVISION

H.A. Mook, J.W. Lynn and R.M. Nicklow, "Temperature Dependence of the Magnetic Excitations in Nickel," in PHYS. REV. LETTERS, March.

V.K. Pare and H.D. Guberman, "Quantitative Analysis of Damping and Modulus Effects in Copper Crystals Using the 'Vibrating String' Dislocation Model," in J. APPLIED PHYSICS, March.

T.S. Noggle, Review of ELECTRON MICROSCOPY IN MATERIAL SCIENCE, March.

W.P. Unruh, Y. Chen and M.M. Abraham, "V_{Al} and V^- Centers in MgO," in PHYS. REV. LETTERS, March.

L.M. Toth, J.B. Bates and G.E. Boyd, "The Raman Spectra of $Be_2F_7^{3-}$ and Higher Polymers of Beryllium Fluorides in the Crystalline and Molten State," in JOURNAL OF PHYSICAL CHEMISTRY, March.

M.H. Brooker and J.B. Bates, "On the Structure of Cubic Crystals: Ca $(NO_3)_2$, Ba $(N)_30_2$ and Pb $(NO_3)^0_2$. An Infrared and Raman Study," in SPECTROCHIMICA ACTA, March.

THERMONUCLEAR DIVISION

A.C. England and G.R. Haste, "Angular Distribution of Bremsstrahlung from Mirror-Confined Electrons," in PHYSICAL REVIEW A, March.

J.D. Callen and G.E. Guest, "Electromagnetic Effects on Electrostatic Modes in a Magnetized Plasma," in NUCLEAR FUSION, March.

REACTOR DIVISION

Sam E. Beall Jr., "Total Energy: A Key to Conservation," in CONSULTING ENGINEER, March.

M.M. Yarosh and B.L. Nichols, "Factors to be Considered in Waste Heat Utilization," in AWARE, March.

U.S. Savings Bonds are a good buy anytime!

Legislators attend SINB workshop here

A two-day workshop for legislators and other officials of state government on the problems associated with the transportation of radioactive materials was held recently in Oak Ridge.

The workshop, entitled "Radioactive Shipments Through Our States -- The Weakest Link?" was sponsored by the Southern Interstate Nuclear Board in cooperation with the U.S. Atomic Energy Commission and Union Carbide's Nuclear Division.

The Southern Interstate Nuclear Board is a non-profit regional coordinating agency serving 16 southern states and Puerto Rico.

Primary emphasis of the workshop was placed on problems of shipping radioactive materials and actions which might be taken by legislation or study committees within each state. Sessions focused on state roles and responsibilities including laws and regulations governing the handling and transporting of radioactive materials.

All sessions were held at the Holiday Inn. The program opened May 16 with a plenary session chaired by Don S. Smith, chairman of the Southern Interstate Nuclear Board. Participants were welcomed by James H. Hill, Assistant Manager for Operations, US AEC – Oak Ridge Operations; and Floyd L. Culler, Acting Director, Oak Ridge National Laboratory.

Other speakers included: Lawrence B. Shappert, design engineer, ORNL; Robert N. Clement, Tennessee Public Service Commissioner; Robert F. Barker, chief, Products Standards Branch, Directorate of Regulatory Standards, AEC; Clifford K. Beck, director, Office of Governmental Liaison -- Regulation, AEC; Jim Guy Tucker, Attorney General, Arkansas; Thomas E. Widerman, director, Vehicle Safety and Reciprocity, Maryland Department of Motor Vehicles; Lamar E. Priester Jr., Deputy State Health Officer, South Carolina; Charles M. Hardin, director, Kentucky Radiological Health Program; and General Delmar L. Crowson, director, Division of Nuclear Materials Security, AEC.

Also included in the program was a panel discussion on the role and responsibilities of industry under government regulations. Participants were William W. Turner, Delta Airlines; Charles H. Mayer, Tri-State Motor Transit Company, Joplin, Mo.; and J.J. O'Driscoll Jr., Southern Railway System.

Participants visited the weighing and sampling station at the Oak Ridge Gaseous Diffusion Plant, and the Oak Ridge National Laboratory. They viewed demonstrations at both facilities dealing with the handling and transportation of radioactive materials.

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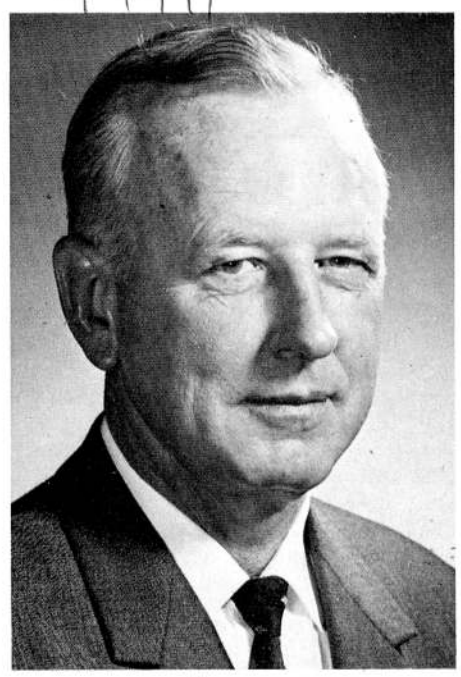


Seagren

Seagren named 'plant engineer of the year'

Harry E. Seagren, Director of the Plant and Equipment Division at ORNL, recently received the "Plant Engineer of the Year Award," from the Knoxville Area Chapter of the American Institute of Plant Engineers (AIPE).

The award is presented annually to a chapter member in recognition of his contribution to the plant engineering profession, his community, his company and his associates.

The presentation stressed Seagren's "contributions to the development and improvement of maintenance activities and the organization of craft and plant support functions of a complex, multiprogram National Laboratory."

Seagren joined the ORNL staff in 1947 after receiving the B.S. degree in chemical engineering from the University of Nebraska.

Seagren and his wife, Ruth, live at 7809 Sheffield Drive, Knoxville.

Foreign travel

The following ORNL staff members were on foreign travel status recently.

Kenneth E. Cowser, Health Physics Division, and Stephen V. Kay, Environmental Sciences Division, attended the IAEA Symposium on Environmental Behavior of Radionuclides Released in the Nuclear Industry which was held in Aix-en-Provence, France, May 14-18.

Cowser presented a paper entitled "Methods of Estimating Dose to Man from Regional Growth of Nuclear Power." Kaye presented a paper that he wrote entitled "Assessing Potential Radiological Impacts to Aquatic Biota in Response to the National Environmental Policy Act (NEPA) of 1969," and a paper authored by P.S. Rohwer, entitled "Relative Radiological Importance of Environmentally Released Tritium and Krypton-85."

Howard W. Dickson, Health Physics Division, participated in the Third International Atomic Energy Agency Coordination meeting on Nuclear Accident Dosimetry and Intercomparison Experiment which was held at the Boris Kidric Institute, Vinca, near Belgrade, Yugoslavia, May 14-25.

COMPANY Service 20 25 30

Y-12 PLANT
30 YEARS

15 1470 15 1469

Bender Ellingson

15 1468 143359

Miss Garrison Hibbs

F. Del Bender, Y-12's Production Engineering and Scheduling, is a graduate of Case Institute, Cleveland, Ohio. A native of Cleveland, he was with the Tennessee Valley Authority before joining the Manhattan Project in 1943. He lives at 114 Monticello Road, Oak Ridge.

Robert D. Ellingson, a native of St. Anthony, Idaho, is a graduate of the University of Idaho. He is in Y-12's Assembly Division, and lives at 185 Outer Drive, Oak Ridge.

Nancy Garrison, Data Processing in Y-12, is a native of Anderson, S.C. She is a graduate of Winthrop College, Rock Hill, S.C., and lives at 408 Villanova Road, Oak Ridge.

Roger F. Hibbs, President of the Nuclear Division, is a native of St. Louis, Mo., and a graduate of Eastern Illinois State University. The Hibbs' live at 916 West Outer Drive, Oak Ridge.

Roy D. Williams, superintendent of Y-12's Metal Preparation Division, is a native of Cosby. A graduate of The University of Tennessee, he lives at 701 West Hill Road, Knoxville.

25 YEARS

Ray Gregory, Jack B. Henry, Hubert Myers, Dean H. Reed, Dorothy H. Conner, Harley C. Orange Sr., Obie Young, Arthur F. Smelcher, Albert H. Johnson, Rufus C. Hill and Henry H. Nicholson.

20 YEARS

Maynard Duncan, Arthur D. Dean, Mary J. Goss, James E. Devaney, William H. Miller, Alfred Duncan, Robert T. Guice, Roger L. McGinnis, William C. Crowe, Charles E. Robinson, Charlie F. Jarvis, Charles A. Stout Jr., Paul I. Tinnel and Sallie M. Jansch.

ORNL
25 YEARS

John A. Martin, Vernon G. Moore, William W. Walden, Wallace E. Denny, Glenn L. McNabb, Margaret L. Castleberry, Edward B. Wagner and Kenneth S. Lyle.

20 YEARS

Bruce A. Hannaford, Frank Sluss Jr., Harry L. Yakel Jr., Malcolm L. Randolph, Alfred W. Freels, John E. Jackson, Max K. Preston Jr., William G. Wilson and Earl E. Breazeale.

ORGDP
25 YEARS

William C. Myers, Willard Brown, Willard G. Norton and Marjorie C. Magill.

John O. Norman and Milburn K. Greenway.

20 YEARS

Robert L. Ritter and Donald E. Tidwell.

Hugh C. Webb and Guy V. Tucker Jr.

PADUCAH
30 YEARS

McKenzie

Thomas A. McKenzie, personnel department superintendent at Paducah, is a native of Decatur, Tenn. He came with the Paducah organization in 1951, after working in Y-12 almost eight years. He and his wife Gertrude live at 2544 LaClede Avenue, Paducah.

McKenzie

20 YEARS

Robert C. Shumpert and George H. Taylor.

"No house should ever be **on** *any hill or on anything. It should be* **of** *the hill, belonging to it, so hill and house could live together each the happier for the other."*

Frank Lloyd Wright.

Five assume new positions in promotions at ORGDP

Five employees were recently promoted at the Oak Ridge Gaseous Diffusion Plant.

Jacob Brown has been named an accounting analyst in General Accounting's Finance and Budgets.

A native of Beaufort, S.C., Brown is a graduate of South Carolina State College.

He lives at 164 West Tennessee Avenue, Oak Ridge, and enjoys basketball, bowling and fishing in his spare time.

Henry T. Harris has also been named an accounting analyst in Finance and Budgets. He is a native of Charleston, S.C., and is also a graduate of South Carolina State College.

Harris lives at 164 West Tennessee Avenue, Oak Ridge. Music and sports occupy most of his free time.

Gerald D. McCarthy has been promoted to a laboratory supervisor at ORGDP's Separations Systems.

Born in Blount County, he has been at ORGDP six years, working with Goodyear Service Stores before joining Union Carbide.

He attended Hiwassee College and lives at Route 2, Maryville. He lists hunting, fishing, boating, camping and working on autos as his main hobbies.

Ridley W. Ray has also been named a laboratory supervisor in Separations Systems.

A native of Cookeville, Ray is a graduate of Tennessee Technological University. He worked at ORNL before transferring to ORGDP in 1969.

He is married to the former Evelyn B. Hull, and they have a daughter, Mary. The Rays live at 613 Robertsville Road, Oak Ridge. He enjoys fishing, hunting and camping.

Janice Wing has been named an industrial relations representative in Personnel Development at ORGDP.

Mrs. Wing is a native of Boone, Ia., and holds a B.S. degree from the University of Iowa.

Her husband, William R. Wing, is a physicist in ORNL's Thermonuclear Division. They live at 111 West Vanderbilt Drive, Oak Ridge. Mrs. Wing is organist at Grace Lutheran Church and teaches private piano lessons at home.

73 1023 73 1022

Brown Harris

73 1024 73 1025

McCarthy Ray

73 1072

Mrs. Wing

WITNESS EXPERIMENTS — Indian students from the Cherokee School in North Carolina look on as Lawton H. Smith and Alberta P. Henley, ORNL's Biology Division, perform surgery on a small animal.

Employees receive silver beaver awards

Two ORNL employees recently were presented the Silver Beaver Award by the Great Smoky Mountain Council (GSMC) of the Boy Scouts of America.

The Silver Beaver Award is the highest recognition which can be bestowed on a scouter who has given unselfishly of his service to boys and the scouting program. The recipients are Paul N. Haubenreich and George H. Johnstone.

Haubenreich, who works in the Reactor Division, has been active in scouting since 1960. He has held office at every level of scouting including pack committeeman, pack chairman, Webelos leader, cubmaster, scoutmaster, troop committeeman, adult leader and merit badge counselor.

Johnstone, of the Plant and Equipment Division, received the award for demonstration of his "exceptional concern for young boys by organizing a pack and troop in a remote deprived area of the Council." Johnstone has been involved in scouting as scoutmaster, council troop leader and tour director, since 1961.

Presentations were made by H. Fritz McDuffie, Director of ORNL's Information Division, who is on the Executive Board of the GSMC.

The two words "information" and "communication" are often used interchangeably, but they signify quite different things. Information is giving out; communication is getting through. —Sydney J. Harris

6-14-73

SWIMMING AREA NOW OPEN — The swimming area at the Clark Center Recreation Park is now open from 11:30 a.m. to 7:30 p.m. daily. Lifeguards are on duty, and swimmers are requested not to use the area when these men are not around.

RECREATIONOTES

ORNL GOLF

ORNL's Whittle Springs tournament was grabbed by J.D. Hudson, with a 75. John Cornelius scored a 77. Handicap lows went to Paul Pair, 75; and Hal Butler, 79. Doug Raymer counted 10 pars, John Bryson, eight.

Division two went to Bob Toucey and Bob DeBakker, with scores of 80 and 83. Handicap lows went to Dick Pawel, 82; and Chester Morgan, 86.

H.S. Bryson scored eight pars; L.C. Manley, six.

Dave Clark took division three with 84, tieing with Benny George. B. Lieberman's 85 was handicap low, and R.W. Tucker came in second with 89. Fred Chattin scored six pars; J.S. Addison, three.

ORGDP GOLF

Frank Copeland copped honors in the Wallace Hills Golf match for ORGDPers in May with a score of 74. George Wylie followed close behind with a 75.

Handicap honors went to J.F. Mooney, 78; and R.W. Lynn, 76. Wesley Hightower and R.E. Nier parred 13 holes.

Division two went to Ben Gaylor with an 84. W.G. Fort fired an 85. Handicap lows went to G.B. Brooks, 86, and to Bill Davis, with an 85. R.O. Meyers, John Cobb, Ed Ellis and R. C. McIntosh all counted six pars.

Sid Speckter's 90 was low in division three, followed by W.L. Rose's 92. R.L. Campbell's 93 was handicap low, followed by Seth Wheatley's 95.

H.R. Kitchin, O.A. Rogers and J.B. Wilhoit all counted five pars.

Y-12 GOLF

High scores dominated the Gatlinburg golf tournament for Y-12ers in May, as Dick Graham's 83 was low for the day. George Dorsey placed second in division one with an 85.

Handicap low scores went to Avis Collins, 86; and Tom Smith, 87. Kyle Johnson parred seven holes.

In Division two, Jim White's 94 was low, tieing with Don Dowrey. Bill Watkins' 97 was second low.

Earl Smith and Curt Ridings scored 100 and 104 respectively for handicap lows. Otis Chambers scored one par, as did Dan Kessell and Spance Ferguson.

Division three went to Jim Ballard and Len Hart, each with 99. John Lindon scored 107. Travis Craig's 106 was low handicap score, and Bill Jago came in second with 105.

Kerry Maulden and M.B. Scott tallied one par each.

SWIMMING IN THE PARK

The swimming area of the Clark Center Recreation Park opened for business for the summer June 5. Hours are from 11:30 a.m. to 7:30 p.m. each day from now until Labor Day. Swimmers are requested to use the beach area ONLY when lifeguards are on duty.

Y-12's Thomas named to national Jaycees

James V. Thomas has been installed as a member of the board of directors of the United States Jaycees, representing five regions, including 31 chapters. He took office at the recent Jaycee state convention held in Chattanooga.

Thomas is primarily a state officer with specific duties relating to the national organization. He will serve both as a member of the U.S. Jaycee board of directors and as a state officer.

Thomas

He served as president of the Oak Ridge Jaycees in 1971-72 and was selected as one of the five outstanding local presidents for the state of Tennessee. He is the son of James P. Thomas, Y-12 Maintenance Division, and works in Maintenance himself as an instrument mechanic.

Thomas and his wife Jean, a past president of the Oak Ridge Jaycettes, live at 101 Orange Lane, Oak Ridge.

Tee-Off Time Application for June 30

(Check Appropriate Plant)

☐ ORGDP -- SOUTHWEST POINT
☐ Y-12 -- WHITTLE SPRINGS GOLF COURSE
☐ ORNL -- CEDAR HILLS

_____ LEADER _____ _____

_____ Phone Bldg.

_____

_____ _____
Time Preferred

COMPLETE AND RETURN TO YOUR RECREATION OFFICE

Entries must be received prior to drawing on June 27, 2 P.M.

ORGDP—Building K1001—C-Wing—Room 136
ORNL/Y-12—Building 9711-5

Tee-off times for all tournaments will be drawn on Wednesdays prior to each Saturday's tournament. Other than at Gatlinburg, golfers are responsible for reserving their own carts by contacting the pro shop following drawing for tee-off times.

CARBIDE SOFTBALL

Three teams are still boasting three wins-no loss records, as the Buccaneers, Computes and Yellow Jackets have chalked up wins over opponents. Four additional teams have won two, lost none: the All Stars, Colts, Red Barons and Snakes.

League standings follow:

Team	W	L
Buccaneers	3	0
Computes	3	0
Yellow Jackets	3	0
All Stars	2	0
Colts	2	0
Red Barons	2	0
Snakes	2	0
Losers	2	1
Hornets	2	2
Centaurs	1	1
Ecology	1	1
Gashouse Gang	1	1
Supersonics	1	1
Raiders II	1	2
Tom's Gizzards	0	1
Al's Pals	0	2
Bio-Rejects	0	2
Playmakers	0	2
Bombers	0	3
Gene's Gang	0	3
K-25 Mech's	0	3

HI POWER RIFLE LEAGUE

Y-12's Jack Huff won first place in the first match of the All Carbide High Power Rifle League with a 472 out of a 500. Y-12's Jack Spurling was second with 467. A. Abbatiello, ORGDP, placed third with a 466-8X.

Other scores were: J.E. Mrochek, ORNL-465; Don Kiplinger, ORNL-458; V.L. Fowler, ORNL-443; W.I. Galyon-429; Troy Burklow, ORGDP-357; J.A. Montgomery, Y-12-288.

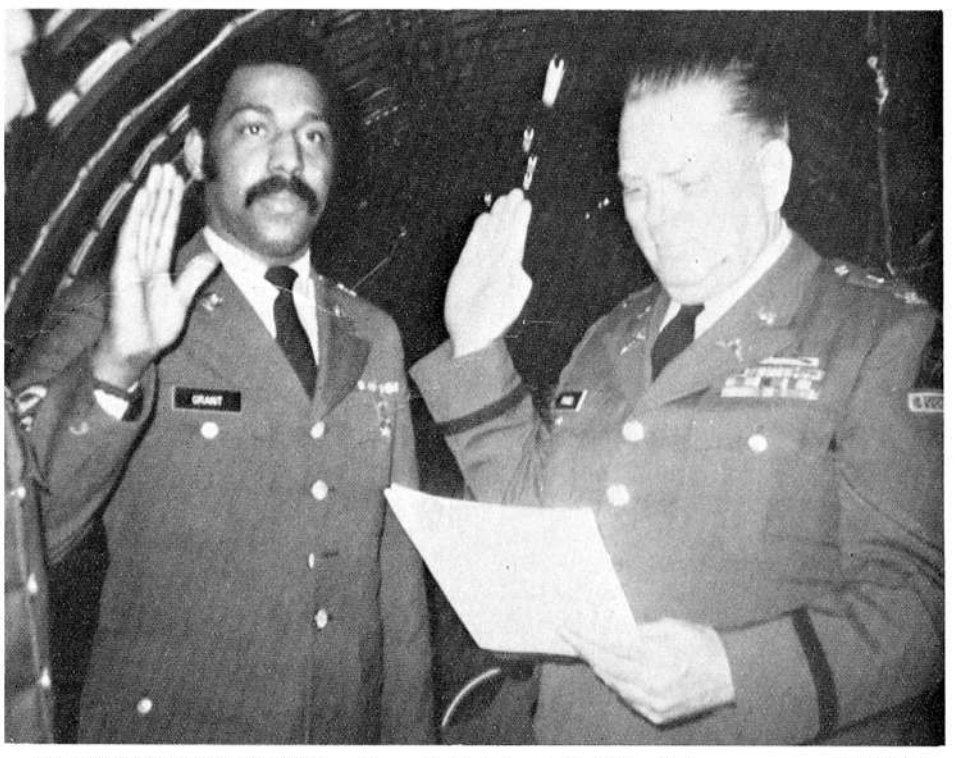
HORSESHOE LEAGUE

The Recreation Department again pages those interested in forming a horseshoe league. Two-men team entries should be called in, extension 3-5833.

"BUTTERFLIES ARE FREE"

The Oak Ridge Playhouse opens June 8, 8:20 p.m. with "Butterflies are Free," a comedy. It will play June 9 and again on June 15 and 16 and June 22 and 23. The cost is $2.50 for adults and 1.25 students (Fridays only).

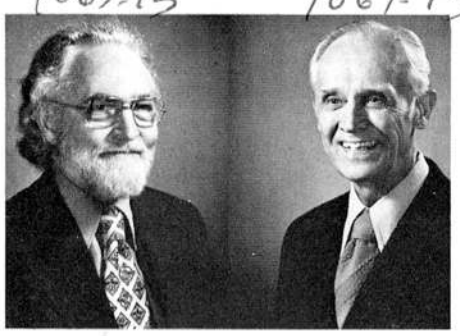
The Playhouse will produce "Once Upon a Mattress" August 10, 11, 17, 18, 24 and 25.



IN UNIQUE CEREMONY — Ronald G. Grant, Utilities Maintenance at ORGDP, recently extended his enlistment in the Tennessee Army National Guard. SP5 Grant has been a Guardsman since April, 1971, and served three years on active duty before coming to the 30th Armored Division Support Command. Col. Fred C. Powell, commander of the 30th ADSC, administers the oath above. The ceremony was a sidelight to a trip to Las Vegas, Nev., for the members of the group, stationed at McGhee Tyson Air Base in Knoxville.

Division Retirees

1065-73 1067-73



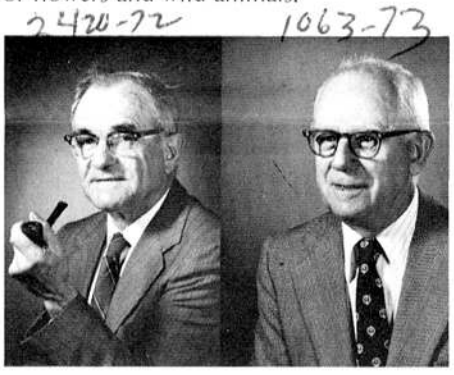
Bettis Bachulis

The following Oak Ridge National Laboratory employees retired as of June 1.

Ben B. Bachulis was a staff engineer in the Reactor Division. He worked at Goodyear Atomic Corporation before joining the ORNL staff in 1956. Bachulis likes to garden and fish in his spare time. Shortly after he retires, Bachulis and Christine, his wife, plan to move to Oregon to be near his son and grandchildren who live in Portland.

Edward S. Bettis, a senior research engineer in the Reactor Division, retired with over 22 years of company service. He plans to be consultant for the three Carbide installations in Oak Ridge. In his spare time, Bettis enjoys painting pictures of flowers and wild animals.

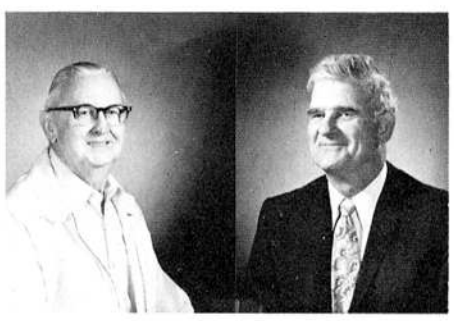
2420-72 1063-73



Cardwell Kerr

David W. Cardwell was a senior development specialist in the Reactor Division. He enjoys fishing, golfing, bowling and traveling. He and Juanita, his wife, have two children and three grandchildren (with a fourth one on the way). They live at 115 Balcoa Circle, Oak Ridge.

James Kerr was a design engineer in the Reactor Division. Kerr was born in Scotland, and came to work for Carbide in 1945. He worked at ORGDP before joining the ORNL staff in 1955. Following his retirement, Kerr and Isabella, his wife, plan to do lots of traveling and camping.



Luttrell Creek

Bishop C. Luttrell, an engineering technologist in the Instrumentation and Controls Division, retired with over 24 years of company service. He and his wife, Mary, plan to attend the International Air Stream Rally in Montana. They reside at 136 Nevada Circle, Oak Ridge.

George E. Creek retired from the Reactor Chemistry Division. Originally from Southern Illinois, Creek came to work at ORNL from the Met Lab in Chicago in 1944. He has two sons, Jeff and Alan, and one grandson. He plans to golf and fish and "just take it easy," during retirement. He and his wife, Clair Louise, live at 103 Essex Lane, Oak Ridge.

1066-73

Newman

Lorne T. Newman retired as a physicist in the Environmental Information Systems office. He and his wife, Mary, live at 311 W. Outer Drive, Oak Ridge.

9 60940

Shipman

Calvin J. Shipman retired as a laboratory technician in the Chemical Technology Division. He came to work in the Chemistry Division of Clinton Laboratories in 1944. Shipman is an avid bowler, and plans to do lots of fishing, traveling and just "enjoying" himself during retirement. He lives at 2706 Tarleton, Knoxville.

1064-73

Riikola Winton

Archie W. Riikola was a research staff member in the Physics Division. He and Catherine, his wife, will be moving to Minnesota following his retirement. They have children living in Memphis, Knoxville and Oak Ridge, so they will visit Tennessee often. Riikola enjoys golfing and fishing.

Melbourne L. Winton retired as a research staff member of the Physics Division. He recently attained 30 years of company service with Union Carbide. The Winton home is at 100 Oneida Lane, Oak Ridge.

SHORT TAKES

You've reached middle age when holding up your chin is twice the job it used to be.

Women will wear anything new regardless of how uncomfortable it is but men will wear anything comfortable regardless of how old it is.

73 942

AUTHOR WINNING PAPER — Oak Ridge Gaseous Diffusion Plant authors, from left, George S. Petit, C. Calvin Wright, Ralph R. Wright and Theodore Kwasnoski, will receive a publications award. Their paper, "Plating Electroless Nickel Directly Onto a Variety of Aluminum Alloys," was chosen one of the three next to best papers published in PLATING last year. The award, consisting of $250 and Silver Medals, will be given at the annual technical conference in Minneapolis this month by the American Electroplaters' Society.

ORGDP paper takes honors in Electroplater magazine

George S. Petit, Ralph R. Wright, Calvin Wright and Theodore Kwasnoski, Oak Ridge Gaseous Diffusion Plant, will receive a publications award from the American Electroplaters' Society. The honors will be granted at the annual technical conference in Minneapolis, June 18. The award, consisting of $250 and silver medals, will be accepted by Petit on behalf of the group. They coauthored the article in AES's journal "Plating." The paper, "Plating Electroless Nickel directly onto a Variety of Aluminum Alloys," was chosen as one of the three next-to-best papers published in "Plating" last year.

The paper describes a universal method developed at ORGDP for plating electroless nickel directly onto aluminum alloys with a quality of adherence at least equal to that obtained by conventional methods. The new method eliminates the need for a specific preplating treatment for each alloy and makes it possible to apply a single procedure to a piece fabricated of a mixture of alloys. The technique also circumvents conventional zinc immersion and copper strike pretreatments. A patent on this development has been obtained by the U.S. Atomic Energy Commission.

The authors are members of the Chemical Analysis Department in the Laboratory Division at ORGDP, and have been associated with the plant's plating development activities for most of the time they have been there.

73 1010 73 1050

Finch Thirloway

Two long-time veterans retire from the Oak Ridge Gaseous Diffusion Plant this month and next.

Spencer F. Finch will retire at the end of July, ending more than 29 years of company service. A general foreman in the Maintenance Division, he lives at 132 Revere Circle, Oak Ridge.

Retiring at the end of June is William H. Thirloway, a staff auditor in the Auditing Division. He also is a 29-year veteran.

Thirloway lives at 446 East Drive, Oak Ridge.

AF appointment to Phillips son

Howard Lee Phillips, son of Mr. and Mrs. Howard A. Phillips, Route 1, Lenoir City, has been appointed to the U.S. Air Force Academy, Colorado Springs, Colo.

Phillips

Phillips is a 1972 graduate of Lenoir City High School and attended Middle Tennessee State University for one year, where he participated in the band, and also sang in the school choir.

The class of approximately 1,350 cadets will report to the academy early in July for eight weeks of basic cadet training before entering regular classes in the fall.

Both of Phillips' parents work in Y-12 . . . his mother, Joyce is in Engineering Mechanics; and his father, Howard, is in Engineering Services.

Savings plan improvements

(Continued from page 1)

every two years. For instance, on June 30, 1973, GSF participants will receive their deductions made during the Plan period of July 1, 1971 through June 30, 1973, plus interest. They will get interest on the Company contributions for that two-year period. They will also get Company contributions from the previous plan period of July 1, 1969 through June 30, 1971, plus interest. Company contributions for the 1971-1973 Plan period will be paid with interest in 1975. This holding period for Company contributions is required by the Internal Revenue Service regulations.

Previously, the Personal Investment Account allowed participants to put money in U.S. Savings Bonds and/or Union Carbide common stock. These two investment options will still be available under the new program, plus two new options.

New options given

The first new option is an Equity Investment Fund. This fund will be managed by the Metropolitan Life Insurance Company. This money will be used to purchase equity-type investments, mainly common stocks. The investor will be credited with fund units, and as the value of stocks in the fund changes, the value of the fund units will change also.

The other new long-term investment option for savers is a Fixed Income Fund with principal guaranteed by Metropolitan. The money becomes part of Metropolitan's general assets, which for the most part are high-return investments, such as bonds and mortgages. The "principal guaranteed" feature of this fund means that no matter what happens, Metropolitan guarantees that employees will be paid back what they allocated to the fund, plus interest at a guaranteed rate. The guaranteed interest rate will be established at the beginning of each year. The interest rate for 1973 has been guaranteed to be seven and one-half percent.

A provision for additional savings is being added to the Plan. Employees who are putting the full 7½ percent into their account may also put in an additional amount of up to 5 percent of their normal straight-time earnings. Company contributions, however, will not be added to this Supplemental Deduction. This additional sum may only be invested in the Personal Investment Account options. It provides an easy opportunity to put aside more money for long-term savings.

Withdrawing provisions

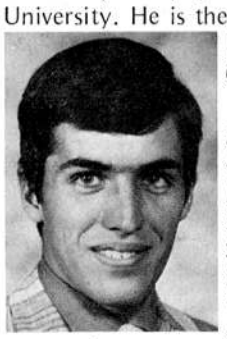
There are provisions for withdrawing from the Plan, or changing methods of saving. A pamphlet describing the withdrawal provision, the Personal Investment Account, and the other improvements in the Savings Plan has been mailed to all employees.

No action is required by an employee who wants to stay in the Plan as he is now . . . even though his new seven and one-half percent deduction may exceed $83. If he originally signed for a dollar amount, this amount will be changed to the nearest one-half percent automatically for the larger amount.

Action will be required, however, by employees who wish to change any of their options to take advantage of the new features of the Plan.

ORNLer's son wins science fellowship

Paul Lee has been awarded a National Science Foundation fellowship for graduate study in physics at Florida State University. He is the son of DeWayne A. Lee of the ORNL Chemistry Division.



Lee

Paul recently graduated summa cum laude from John Brown University in Siloam Springs, Ark., where he achieved the "outstanding student in natural sciences" award. Paul was also a four-year letterman on the golf team at the University.

Jonathan Lee, Paul's brother, will graduate from Karns High School as valedictorian.

ORGDP

RIDE from Clinton to Portal Two, straight day. Peggy Corey, plant phone 3-3657, home phone Clinton 457-0430.

Y-12 PLANT

CAR POOL MEMBERS from Athens, or RIDERS, via Sweetwater, Loudon or Lenoir City, to all portals, straight day. Plant phone 3-7181, home phone Athens 745-2838.

RIDE or will join car pool from vicinity of Forest Heights Drive, Knoxville, to Biology Portal, straight day. T.G. Harmon, plant phone 3-5728, home phone Knoxville 584-9647.

ORNL

CAR POOL MEMBER from vicinity of Shanondale Nursing Home and Middlebrook Pike, Knoxville to West or South Portal, 8 a.m. shift. J.W. Nave, plant phone 3-6766 or Knoxville 588-0687.

CAR POOL MEMBER from vicinity of Alcoa Highway to either portal, 8 a.m. shift. D.A. Dyslin, plant phone 3-1666 or Knoxville 577-1354.

TWO CAR POOL MEMBERS from vicinity of Waddell, West Outer or Pennsylvania to East or North Portal, 8:15 shift. Tom Burnett, plant phone 3-6929 or Oak Ridge 483-1975; or Dick Reed, plant phone 3-1801 or Oak Ridge 483-3458.

CAR POOL MEMBERS from West Knoxville vicinity (West Hills, Crestwood Hills, Suburban Hills, Hidden Valley, or will rendezvous at Suburban Shopping Center, Walker Springs Road Exit, Cedar Bluff Exit, or work out arrangement with interested parties from Gulf Park or Belmont West) to either portal, either shift. E.L. Fair, plant phone 3-6775 or Knoxville 693-3211.

RIDE from Monticello Apartments, Oak Ridge, to East Portal, 8 a.m. shift. Benjamin Thomas, summer student, plant phone 3-6816.

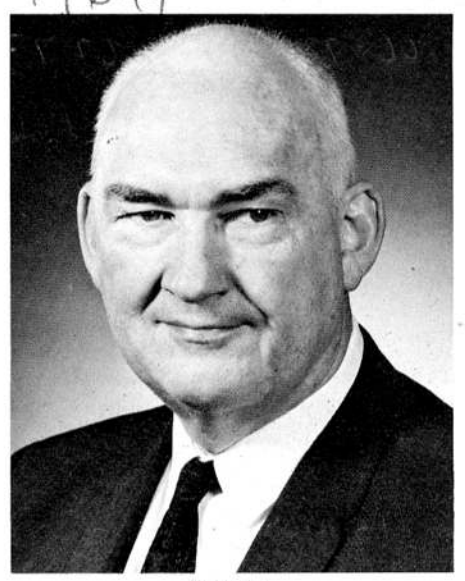
HPS distinguished service award goes to W.S. Snyder

Walter S. Snyder, assistant director of the Health Physics Division at Oak Ridge National Laboratory, recently received the Distinguished Service Award of the Western Pennsylvania Chapter, Health Physics Society.

The citation and plaque were presented to Snyder in appreciation of both his scientific contributions and his professional leadership in the field of radiation protection.

Snyder received the M.A. and Ph.D. degrees in mathematics from Ohio State University. He served as professor of mathematics at The University of Tennessee and consultant to the Health Physics Division, prior to joining the ORNL staff as a full-time employee in 1959.

In addition to his duties as assistant director, Snyder heads the Medical Physics and Internal Dosimetry Section of the Health Physics Division. His special interest lies in the field of internal dose. He supervised the technical work in the revision of the Internal Dose Handbooks of the National Committee on Radiation Protection and Measurements and the International Commission on Radiological Protection, and developed many of the equations and methods for estimating internal dose.



Snyder

Snyder holds membership in several professional societies. He is an editor of the **Health Physics Journal**, and is one of the authors of the Medical Internal Dose Pamphlet No. 5, Supplement No. 3 to the **Journal of Nuclear Medicine.**

FCC license prep course is available

Persons with some knowledge of AC-DC circuits will be able to take an FCC License Preparation course this summer in Oak Ridge. Roane State Community College is offering the course at Y-12's Training and Technology (TAT) facility in Oak Ridge, Monday, 5:30 to 9 p.m.

Robert Jennings will be the instructor, and the course will cover basic FCC laws and operating practices as well as circuits and advanced operating practices. It is pointed out that the course is preparation for those wanting to obtain third class operator's permit and/or the second class operator's license.

Classes begin Monday, June 11, and run 10 weeks. Further information may be obtained from Robert Jennings, Roane State, at Harriman 882-0342.

Foreign travel

Raymond G. Wymer, Chemical Technology Division, will present a paper entitled "Sol-Gel Processes at Oak Ridge National Laboratory: Development, Demonstration and Irradiation Tests," at the International Atomic Energy Agency Panel on Sol-Gel Processes for Fuel Fabrication, May 20-24, in Vienna, Austria.

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